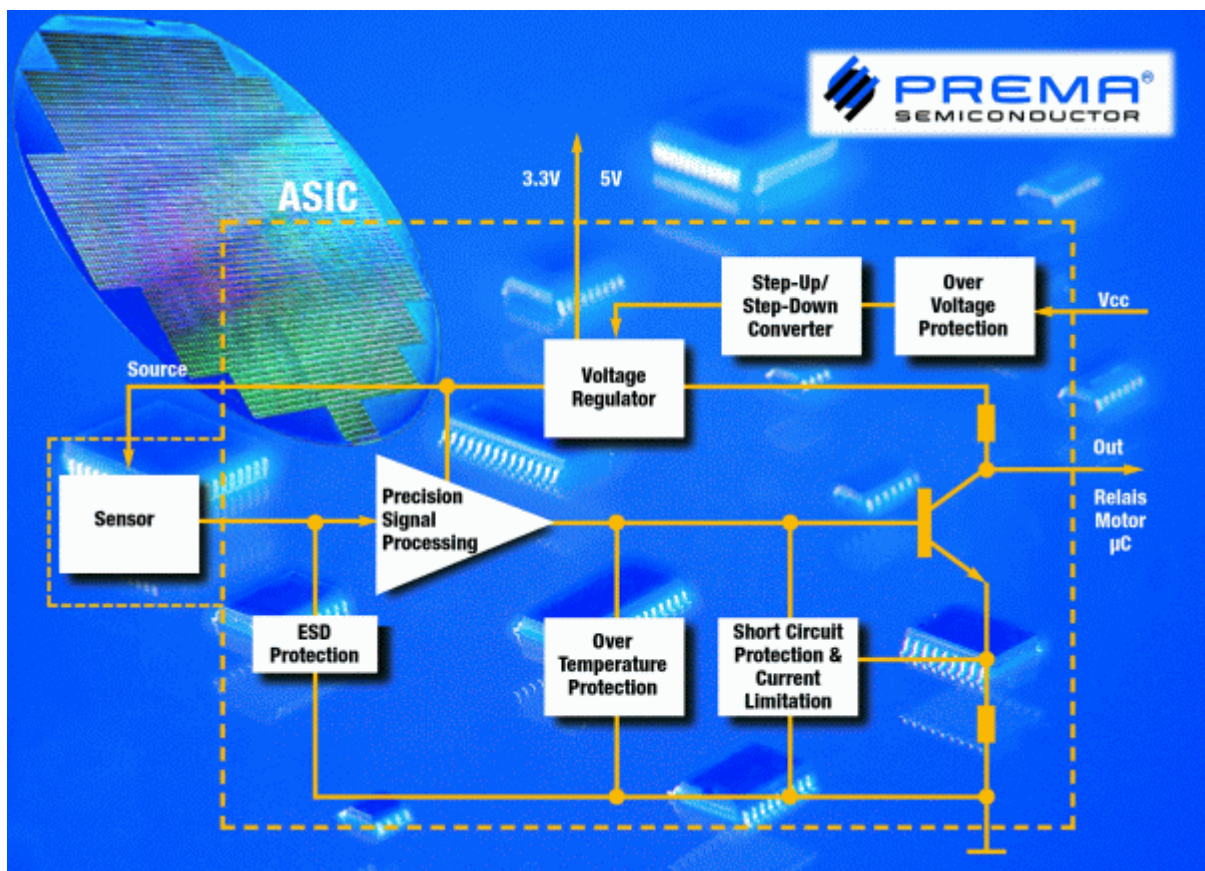


Analog ASICs for Industrial Applications

Analog ASICs, developed for the use in industrial environments, have to meet high requirements. First of all the supply voltage is high, typically at 20-30V, with peaks up to 40V. This requires a process, which is suitable for this voltage range, like PREMA's ModuS U6 process.

Though the demands on ASICs designed for such environments are depending on the application, there are also similarities. Usually the supply voltage suffers from strong fluctuations, therefore a regulator has to be integrated for stabilization. Frequently the ASIC shall provide the supply for other components, like microprocessors. This can be realized by integrating a step-down-converter reducing the applied voltage to 5V or 3.3V.



In order to read the signals from a sensor (for example photodiodes, pressure or temperature sensors) an interface must be integrated. As a first step the input signals need to be amplified. For this purpose precision amplifiers are required, or transimpedance amplifiers for photo diodes. For the outputs of an ASIC LED and relays, drivers are available. If high output currents are necessary, an internal protection against excess temperature may be necessary. This can be realized by integrating a temperature sensor.

Beside of these analog blocks digital circuits are required, for a simple event control of signals as well as for the more complex communication between the ASIC and a micro-processor via SPI interface. The digital part in PREMA ASICs is realized with the Constant Current Logic (CCL). Using this logic the interference between the digital part of the circuitry and its sensitive analog block is reduced since the gates are switched by currents. In order to minimize the power consumption of the complete IC, the blocks, which are not used, can be deactivated.

These and other useful circuit blocks are part of the PREMA cell library. These cells are used as a basis for the chip design and are customized for the required application. Thus development times are considerably reduced. Since the IC is individually developed according to customer demands and adapted to suit a specific application, it will become a true ASIC (application specific IC). This means that the customer will get all its advantages, like the protection against product replications and the guarantee of delivery.

You will find more information about ASICs at our website www.prema.com .

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